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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/900,986	07/09/2001	Ramkumar Subramanian	039153-0363 (F0804)	8654

7590 12/03/2003

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EXAMINER

CHEN, JACK S J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/900,986

Applicant(s)

SUBRAMANIAN ET AL.

Examiner

Jack Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,9-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

In response to the communication filed on September 15, 2003, claims 1-4, 9-13, 15-17 and 19-20 are active in this application as a result of the cancellation of claims 5-8, 14 and 18.

Information Disclosure Statement

The information disclosure statement filed on October 26, 2001 has been considered.

Oath/Declaration

Oath/Declaration filed on July 9, 2001 has been considered.

Specification

1. The disclosure is objected to because of the following informalities: page 5, paragraph [0013], line 5, the term "of" should change to -- on -- .

Appropriate correction is required.

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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3. Claims 15-17, 19-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 15, lines 7-8, the phrase "an etching process the second" is unclear; changing to -- an etching process, wherein the second -- is suggested.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 11-13, 15-17 and 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu, U.S./5,688,704.

Liu discloses a method for forming a IC, which comprises providing a gate dielectric layer 15 (fig. 1 or layer 29 as shown in fig. 5) above a top surface of a substrate 11; providing a silicon and nitrogen containing layer 17 (i.e., silicon nitride layer) above the gate dielectric layer (figs. 2, 5); providing an oxide layer 19 above the silicon and nitrogen containing layer (fig. 2); selectively etching the oxide layer to form a first trench in the oxide layer (fig. 4); selectively etching the silicon and nitrogen containing layer to form a second trench (fig. 3) in the silicon and nitrogen containing layer, the second trench being narrower than the first trench and being disposed below the first trench (fig. 4); and providing a gate conductor material 31 in the first

trench and the second trench to form the T-shaped gate conductor (fig. 5), see figs. 1-7 and cols. 1-4 for more details.

Re claims 2 and 12, further comprises removing the oxide layer (figs. (5-6).

Re claims 3 and 13, further comprises removing portions of the silicon and nitrogen containing layer, whereby a pair of spacers 33 remain underneath the gate conductor material in the first trench (fig. 7).

Re claim 17, wherein the gate conductor material is doped or undoped polysilicon material (fig. 5, col. 2, lines 63).

Re claim 19, wherein the gate conductor material is silicided (col. 3, lines 20-30).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 4, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu, U.S./5,688,704.

Liu disclosed above, however, Liu does not explicitly show the width for the first and second trenches as shown in the instant claims 9-10 and using polishing process as shown in claim 4.

It is well known in the art to use polishing process or etch-back process for planarization since both of them provide the same results. Therefore, it is obvious to one having ordinary skill in the art at the time the invention was made to either one of them.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Liu by selecting the suitable width for the first and second trenches, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Chen whose telephone number is (703)308-5838. The examiner can normally be reached on Monday-Friday (8:30am-6:00pm) alternate Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W Whitehead can be reached on (703)308-4940. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

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A handwritten signature in black ink, appearing to read 'Jack Chen', with a long horizontal flourish extending to the right.

Jack Chen
Primary Examiner
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